25X1

[redacted]

16 July 1965

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Subject: [redacted] Project [redacted]
Progress Report - 1 June - 15 July 1965

Gentlemen,

25X1

Enclosed is a copy of [redacted] Progress Report on Project [redacted] for the period covered 1 June - 15 July 1965.

25X1

Very truly yours,

[redacted]

25X1

RJL/de

Enc: (1) P.R.

Approved For Release 2002/08/20 : CIA-RDP78B04747A003000050044-6

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25X1 [redacted]

16 July 1965

25X1 Subject: [redacted] Project [redacted] 25X1
Progress Report - 1 June - 15 July 1965

Gentlemen,

Enclosed is a copy of [redacted] Progress 25X1
25X1 Report on Project [redacted] for the period covered
1 June - 15 July 1965.

Very truly yours,

[redacted] 25X1

RJL/de

Enc: (1) P.R.

25X1

25X1 [redacted] PROGRESS REPORT

Period Covered: 1 June - 15 July 1965

25X1 Document No.: [redacted]

Dated: 14 July 1965

CONTENTS

This report covers an extra two weeks in July because, at the time of writing, certain very important changes had been made, and discussions on specification changes and clarifications held with the customer's technical representative. This report summarizes these. The next report will cover the period from July 15 to August 31, 1965 [redacted] 25X1

25X1 [redacted]

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I PROJECT STATUS

25X1 [redacted]

The layout of the light table has been completed and detailing started. The cold cathode light assembly is presently being fabricated. The layout of the tilting base is 75% complete.

The design is following, basically, that described in our Final Report of February 1965. The specific differences are tabulated in Section III of this report.

In regard to film tensioning, it has been decided to modify the approach described in the May Progress Report. The mechanism, as it now stands, is designed to lower the film to the viewing surface with rotary solenoid actuated rollers which at the same time pull the film over spring mounted rollers applying a few pounds of tension to it. The film spools are held stationary during this operation by friction brakes. Provision has been made for increasing the film spool friction by the use of small electro-mechanical brakes geared to each drive spindle.

The handwheel switch assembly has been design detailed, and one unit is being fabricated in the model shop to investigate operating parameters such as torque required to operate, effectiveness of the spring return in various operating positions and effective deadzone or backlash. It is intended that this assembly will be common to all three designs.

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It is recognized that the height of this unit is critical, and every effort has been made to keep it close to the nine inches specified. However, in order to meet other basic requirements on the performance of the light source, it appears that we
25X1 will still require a height of 10 1/4 inches.

[redacted] DESIGNS

25X1 The [redacted] layouts have been started. It is our intention to keep the designs as similar as possible, and also to utilize as many of the [redacted] subassemblies as practical.
25X1

The micrometer design has been completed, and a supplier selected. Tests have been run in the laboratory on a similar micrometer positioning a simulated carriage to demonstrate the soundness of the proposed approach. In addition, to keep the load on the micrometer low, it has been decided to manufacture the X and Y carriages from an aluminium alloy (probably 356 with T6 heat treat) instead of meehanite. This we feel will in no way affect the performance of the instrument.

It has tentatively been decided to manufacture our own sliding ways rather than use those obtainable [redacted] due to considerations of accuracy and delivery requirements. 25X1

The magnetic coupling for the tracking lights in the
25X1 [redacted] has been breadboarded, and a final configuration selected.

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II PROBLEM AREAS

SIZE

As mentioned previously, [redacted] will require an additional 1 1/4 inch in height from the specified 9 inches in spite of our efforts to keep this to a minimum [redacted] will require a length of 60 inches instead of the 55 called for in the Design Objectives. This 60 inch length was called out in our Final Report on the Design Study. Please note that this additional 5 inches is made up of a 2 1/2 inch increase at each end. Actually, the distance to the edge of the illuminated area from an operator viewing from the end of the instrument has only increased by this 2 1/2 inches.

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III CHANGES AND QUALIFICATION OF SPECIFICATIONS

To more fully define the physical and performance characteristics of the equipment being fabricated under this contract the following specification interpretations, qualifications and changes are presented. All of these points have been discussed with your technical representative (during his July 1, 1965 visit and in a subsequent telephone conversation, July 8, 1965), and we understand that they are acceptable.

PRECEDENCE OF SPECIFICATIONS

25X1 [redacted] Final Report, February 1965, on the
25X1 Design Study, [redacted] Proposals [redacted] dated 25X1
25X1 April 23, 1965, and [redacted] Proposal [redacted] 25X1
dated April 23, 1965, are the applicable specification control documents. However, it is understood that since the Design Objectives are referenced in these that they too are still applicable except where there is a conflict with the specified documents. It is further understood that the precedence of documents is the Final Report dated February 1965 first, the [redacted] Proposals second, and the Design Objectives third. 25X1

SIZE

25X1 The [redacted] light table will have maximum length of 34 1/4 inches not including spools, maximum width of 16 9/16 excluding handwheels and a maximum height of 10 1/4 inches of the viewing surface above the bottom of the base.

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FILM TENSIONING

The mechanism for raising, lowering, and applying tension to the film will be an electrically operated device, controlled by a switch which is a part of each handwheel assembly. It shall be a design goal to keep the lost motion (which is necessary to operate the switch) at the handwheel below plus or minus 10 degrees.

FILM FLATNESS

It is understood that the degree of flatness achievable by the technique of applying tension depends greatly on the type and condition of the film being used, and it is not expected that the flatness will approach that obtainable with more sophisticated and costly methods such as a vacuum plate or an overlay platen.

SHADES

Minimum shade travel from the edge of the illuminated area will be six inches, and locking of the shade position will be achieved by friction in the shade operating mechanism.

SPOOL LOADING

The technique for spool loading will be as follows: The operator, after setting the driving head to the correct position for the film spool used, will retract the drive spindle by pulling out a knob on the end of the spindle. A button in the center of the knob must be depressed first to unlock the spindle from its normal drive position. The spindle will automatically lock in the loading position giving ample clearance between the ends of the spool holding pins to insert the film spool. The operator will load the spool by first slipping it on the idling, or non-driving pin, and second, releasing the drive spindle from its locked position (by again depressing the center button). The end of the spring loaded drive spindle will enter the film spool,

25X1 thus supporting it. The operator then simply rotates the spool until the driving pins on the spindle find the drive slot in the spool and snap into place.

This design, although different than that proposed, affords the required simplicity and ease of operation.

CENTER SUPPORT

The design of the center film spool support is such that it will be slid over to one side instead of hinged out of the way when using 9 1/2 inch wide film.

HIGH INTENSITY LIGHT SOURCE

The high intensity light sources will be 1/2 inch in diameter and have a brightness of 30,000 foot-lamberts, and a color temperature of 3200 degrees K.

HANDWHEEL TO SPOOL RATIO

In the normal mode, the ratio between the handwheel and the spool will be 1:1. In the high or slew mode, the ratio will be 2.5:1 (spool faster).

MICROMETERS

25X1 The [redacted] micrometers used to position and measure the displacement of the X and Y carriages will be metric reading with a least reading of one micron using a single line vernier.

25X1 [redacted] Drawing [redacted] is the micrometer outline. The
25X1 micrometer readings will increase in the X axis as the carriage is moved to the operators left and increase in the Y axis as the carriage is moved to the rear. Although the micrometer spindles are captive in nests on the carriages, it is intended that highest accuracy measurements be made approaching the targets in the directions of increasing micrometer readings. The position of

25X1

the micrometers will be as shown on our Drawing [redacted] the X axis unit being in back, and the Y axis unit being on the left side of the Y carriage. 25X1

MISCELLANEOUS CONSTRUCTION FEATURES

Ball bearings will be used in many places to keep film driving torques at the handwheel at a minimum. Aluminium will be used, instead of cast iron for the translating carriages.

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IV OTHER DESIGN CHARACTERISTICS DISCUSSED WITH TECHNICAL REPRESENTATIVE

The following is a summary of some of the other design characteristics discussed with the contractor's technical representative July 1, 1965, and July 8, 1965.

ILLUMINATION COLOR

It is understood that a high color temperature of the illumination is desirable.

ELECTRO-MECHANICAL BRAKES

Provisions have been made for the incorporation of electro-mechanical brakes to decelerate and lock the film spools after transporting film. The inclusion of these brakes is optional, we intend to evaluate them on the first unit.

25X1 WEIGHT [redacted]

25X1 The weight [redacted] will be more than the 50 pounds originally estimated. Present weight estimate is 120 pounds.

ILLUMINATION VARIATION

We intend to specify and inspect the illumination intensity variation of the cold cathode light source using a photometer having an aperture of 1/10 inch in diameter.

GENERAL ILLUMINATION

It is understood that the customer agrees to consider, at a future date, a lowering of the light level requirements to those specified in the Design Objectives, especially if it would result in a decrease in height [redacted] 25X1

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V PROJECTED WORK
(to August 31, 1965)

The coming six week work period [redacted] 25X1

25X1 [redacted] we intend to continue engineering and design during this period, certain other operations such as procurement and fabrication will no doubt be affected.

25X1 [redacted]

We plan to complete the design and detailing [redacted] 25X1

[redacted] All purchased and fabricated parts will be released and

25X1 fabrication of parts will be 20% complete.

[redacted]

We plan to complete the design [redacted] and 25X1

25X1 75% of the detailing. All long lead items will be released and fabrication started.

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SUGGESTED AGENDA

25X1 [redacted] PROJECT REVIEW MEETING

1 July 1965

PRESENT STATUS

25X1 [redacted] Engineering

Tensioning Control

Gearing

Light Source

Design

Table Layout

25X1

25X1 [redacted]

Engineering

Microscope Carriages

Tracking Light Sources

Optics

Magnetic coupling

Micrometers

Design

25X1 Features [redacted] to be used

Tensioning

Spool Loading

Basic Gearing

PROBLEM AREAS

25X1 Size [redacted]

Tensioning

Light Source Specifications

Spot Size

Uniformity

Intensity Levels - transformer

25X1

Weight

Miscellaneous problems with specifications

Slew Ratio

Construction Features

Spool Loading

Center Post

Film Flatness

Handwheel Torques

25X1

Proposal [redacted] Power Slew

Design and Engineering Changes

Cost

Scheduling

25X1

Proposal [redacted] Power Assist

Design and Engineering Changes

Options

Cost

Scheduling

Tentative Proposal on Incorporation of DIG System